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CAMPHOR

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CAMPHOR

IN JAPAN AND IN FORMOSA

By CHARLES ARCHIBALD MITCHELL
Member of The Japan Society, London

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INQUIRY RELATING TO
CAMPHOR IN JAPAN
1897—1898

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CAMPHOR IN JAPAN.

CHAPTER I.

THE CAMPHOR TREE.

THE *Camphor Tree*, called by botanists *Cinnamonium Camphora*, or *Camphora Officinarum*, and *Kusu-no-ki* by the Japanese, belongs to the Natural Order of the Lauraceæ. Botanical name.

The camphor tree is a rather small-leafed evergreen, attaining in its native habitat the height of from sixty to one hundred feet, with wide-spreading branches and a trunk two to four feet in diameter. Camphor tree described.

The camphor laurel ranks among the stateliest of trees, reminding one of the British oak, but more of the American "live," or evergreen, oak. Appearance.

The bark of the trunk is smoother than that of our oak, but less smooth than the bark of the Cinnamon tree, which, in Formosa, grows in the same neighbourhood. Bark.

The leaves are of a light green colour, and when young have a slightly brownish tinge. They are smooth and shiny above, and whitish on the under surface. The full-grown leaf measures three and a half to four inches in length and an inch and a half in width. Leaves. The fresh leaves, when crushed in the hand, yield a pleasant perfume, of camphor blended with the fragrance

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The flowers. of the walnut leaf. The flowers are white, or greenish white, and are visible from February to April. They are followed in October by berry-

The berries. like, one-seeded fruits, about three-eighths of an inch in diameter. The berries are used in Japan to make a kind of tallow. When fresh they have a slight smell of camphor. The fruits are greedily

The wood. eaten by chickens and wild birds. Camphor wood is white in the branches, yellow in the trunk, turning to brown as the root is approached; the rings of growth are plainly marked. It is much esteemed, not only for its fine grain and silky sheen, but for its efficacy against the attacks of insects. Every part of the tree, except

Smell of gum camphor. the outer bark, smells of camphor. Yet the tree does not scent the air like the pine or eucalyptus.

Parasites. The camphor laurel is not very subject to parasites, or growth of moss. In Formosa I have noticed a certain large orchid growing like a ring round some of the highest branches.

Native range. The camphor tree is native in the coast countries of Eastern Asia, from Cochin China to the

Islands: mouth of the Yang-tse-kiang, and on the adjacent

Japan. islands from the southern part of the Japanese

Ryu-Kyu. Empire, by way of the Ryu-Kyu Islands and For-

Hainan. mosa, to Hainan, off the coast of Tong-King.

Sumatra. A Dutch planter from Sumatra told me that the tree was also met with on the mountains of that

Interior of Asia. island, behind Padang. Its range extends into the interior of China as far as the province of Hupeh, about five hundred miles from the coast on the

Best situations. Yang-tse-kiang. Camphor trees growing wild in their native habitat are usually most abundant on

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hillsides and in mountain valleys, where they have good soil drainage and are not overcrowded. The temperature in the greater part of this region, which is partly within the tropics and partly subtropical, rarely falls below freezing. The tree is an evergreen, changing its leaves in April, and therefore the winter temperature is a factor of more importance than would be the case with a deciduous tree. Notwithstanding the comparatively narrow limits of its natural range, the camphor tree grows well in cultivation under widely different conditions. Large trees, at least two hundred years old, are growing in the temple courts at Tokyo, where they are subjected to a winter of from seventy to eighty nights of frost. Its growth is comparatively slow on sterile soils, but when conditions are favourable it usually grows very rapidly. Under favourable conditions an average of thirty feet in height, with trunks six to eight inches at the base, may be expected in trees ten years from the seed. Trees under thirty years growth are reckoned as of no use for camphor making. When a camphor tree is cut down, the stump, if allowed to stand, will grow fresh shoots. The largest camphor tree I ever saw was at Yawata, Province of Yamashiro, Japan. It was a temple tree, standing alone on a hillside, and had attained a girth of twenty-seven feet, at five feet from the ground. This giant tree was worshipped by the simple country folk, who had hung ropes of straw round it in token of reverence. Excepting in the temple groves of Japan, I saw no evidence

Temperature.

Fall of leaf.

Cultivation.

Fine trees at Tokyo.

Size at thirty years.

Limit of age for camphor making.

Big tree.

No signs of camphor planting.

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of camphor trees having been specially planted. They grow from old stumps, or from self-planted seeds, and struggle for place with the surrounding vegetation. It is hardly to be expected that country people will take the trouble to plant trees that take a century to mature. It would be much more profitable to plant pines or cryptomerias. When, in Japan, the hillside woods are cut over for small stuff for making charcoal, the young camphor trees are not cut but left standing. That is the nearest approach to planting that I noticed. Not so in Formosa. There trees of every kind are cleared off. Neither in Japan nor in Formosa are natural forests or groves to be found composed chiefly of camphor laurels.

A century to mature.

An approach to planting.

No woods or groves of camphor trees.

DISTRIBUTION.

Distribution of the Camphor tree in Japan.—The Japanese authorities give lists of provinces where the camphor tree is worked for camphor. Every one of these provinces is known by two or more names, which makes it troublesome to find them on the map. The tree is used for camphor making in Kazusa province, near Tokyo. This is the most northern spot where camphor is manufactured. Then, tracing it south, it is also found in Awa, Izu and Suruga provinces. We find it next in the province of Kii. Moving S.W. we next find it in Tosa, Shikoku Island. Then we cross to Kyushu Island, where it is

Each Japanese Province has several names.

Most northern camphor region.

Six Provinces on Pacific Ocean.

Tosa, in Shikoku.

Kyushu Island.

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worked in every one of its nine provinces. *These* names can all be found on the Welcome Society's map of Japan. These provinces are all on the Pacific Ocean. In the western provinces of the Main Island of Japan the camphor tree does not grow. Thus, more than half Japan has no camphor trees at all.

Where no camphor grows.

The wooded highlands of the interior (even in Kyushu, the South Island) contain few or no camphor trees. It is only on the lower parts of the hills, thickly covered with evergreen forest, composed of several species of laurel, laurel-leaved oaks, camellias, pines, cedars, and bamboos that the camphor tree is found growing wild. Even there, it is the least numerous of the various kinds of trees. However, it is still common enough, and occurs in all sizes, from baby-plants to large trees. As to the height above sea level at which wild camphor trees are found; in Southern Japan I should place the limit at a little over one thousand feet, and then only if near the coast.

No camphor in interior highlands.

Where most trees found.

Not very common anywhere.

Limit of growth above sea level.

Government Forests and Private Woodlands.—In Kyushu rather more than half the woodlands are Government property, and the rest in private ownership. The result of some inquiries I made in Kyushu showed that the more inaccessible and natural forests were Government property. The more get-at-able woodlands were in private hands. The Government forests have been much neglected in the past, but are now being better taken care of, since the Emperor has created a department of forestry.

Government forests and private woodlands.

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For yielding gum camphor conditions must be favourable.

Conditions of Successful Cultivation. — Although the camphor tree will live in many places, it must be remembered that for the distillation of gum, that is from a commercial point of view, it must be grown under most favourable conditions. The soil should be well drained but subject to

Plenty of rain.

abundant rains. At least fifty inches of rain during the warm growing season is desirable. An abundance of plant food rich in nitrogen is

Private planting would not pay.

required for rapid growth. A tree yielding such slow returns could, of course, only be planted on a large scale by the State. While in Tokyo I

Government camphor orchards.

was told that regular camphor orchards had been planted in Kyushu, and it was expected that with proper management the trees would be ready for the still after twenty-five or thirty years, instead of in about eighty years as at present. In spite of inquiries, while in Kyushu I failed to discover any of these "orchards."

The camphor tree would grow and flourish in many tropical and especially sub-tropical

Camphor in Madras, Mauritius and California, South Florida, and Gulf of Mexico.

countries. It has been planted experimentally in Madras and the Island of Mauritius, also in the Canary Islands. The largest specimen in Europe is in the Pisa botanical gardens. In the San Joaquin Valley, in California, it grows, in spite of hot, dry summers. The Americans purpose trying plantations of camphor trees in Southern Florida and along the strip of coast on the Gulf of Mexico, between New Orleans and Galveston, Texas. Twelve hundred young

Trees shipped to U.S.A. from Kobe.

trees were shipped direct this spring from Kobe *vid* San Francisco to New Orleans.

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Old law for replanting.

In Japan the law used to require that two new trees be planted for every one cut down. However, since the Revolution of 1868, this law has fallen much into abeyance. It so happens that it is just within the last thirty years that camphor making has become an important business in Japan. In Kyushu I never heard of this law being put into practice as regards camphor laurels. Pines and cedars, however, *are* planted to replace those cut down.

In abeyance since 1868.

Young trees delicate.

Camphor trees; their diseases and the dangers they are subject to.—While young, the camphor tree is distinctly delicate, being easily injured by frost or high winds. It thrives best when protected by other trees, or when growing in valleys. The twigs and small branches are decidedly brittle. After heavy wind the ground beneath the tree is littered with fallen twigs. In Formosa many fine-looking old trees have hollow trunks—perhaps hollowed by white-ants, as the bark was streaked with their peculiar "covered roads." Japan seems singularly free from forest fires. In Formosa I saw few traces of fire in the primeval forest. The Hakka people, being interested, are not likely to burn woods containing camphor; though they burn the jungle when they can.

Twigs brittle.

Hollow trunks.

Few forest fires.

Camphor wood used as timber.

In Japan the amount of camphor wood used for cabinet work and timber is small. From Formosa a good many thick camphor-wood planks are exported to China.

Talk with a native camphor dealer.

Camphor Reserves in Japan.—I had a conversation on this subject with Mr. Matsuda Mortaro,

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of Miyasaki, Kyushu, a Japanese camphor-dealer who had travelled recently through the camphor districts. He told me that in Tosa Province, which at one time was the chief camphor producing district, the trees have nearly all disappeared, and as a consequence the production of camphor was stopped. Speaking of his native island Kyushu, he said that the production of camphor was decreasing every year in Hyuga, Osumi and Satsuma provinces, and also in Hizen province, in North Kyushu. In Higo there was little paying wood left. As regards Higo (where Kumamoto is situated) I found his statement to be true. He said positively that in Kyushu no fresh trees were ever planted to take the place of those removed; and that the only reserves were the trees in the less accessible woods, mostly Government property. His views were pessimistic.

Tosa worked out.

In Kyushu, production decreasing.

No replanting.

Nature of the "reserves."

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CHAPTER II.

Camphor Making in Japan.

In Japan the camphor trade is of modern growth. Fifty years ago it was unimportant. Some of the principal and most skilful camphor makers are from Tosa province, in Shikoku Island, where the manufacture was carried on very briskly from twenty-five to fifteen or even ten years ago. It was in Tosa that the still now used throughout Japan was first developed and employed. This still consists of four parts—a fire-place, a pan for boiling water, a steaming cylinder and a condenser. The boiling-pan is a shallow round-bottomed pan of iron, the cylinder is a wooden tub, three and a half to four feet high and two feet bottom diameter, tapering, say of fifty gallons capacity; the condenser consists of two wooden boxes, the under and larger one open side up, kept about two-thirds full of water. The upper and smaller one is inverted with its edges below the water, forming an air-tight chamber. The inverted box has a low coaming round the upper edge of its top to retain a slight depth of condensing water over its upper surface. The inside of the inverted box is divided into five or more compartments by screens or partitions, each perforated

The still.

Boiling-pan.

The condenser.

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with an opening, enabling the steam from the chip-cylinder to pursue a zigzag course as it rushes over the surface of the water upon which the smaller box is fixed. At the further end of the last compartment is a small hole, closed with rice-straw, a sort of safety valve for excess steam. The condenser is connected with the steaming cylinder by a pipe of bamboo. The rest of the still is constructed of clay, basket-work and mats. Generally several stills are ranged side by side under a slight shed. The whole thing is very primitive, the still itself costing less than a pound sterling to put up. Judgment, however, is required in locating the still, which must be near the trees and yet have a supply of running water. It does not pay to carry the wood more than two miles. The camphor maker ad his family live in a bamboo and thatch hut alongside the stills, and suffer a good deal in their eyes from the smoke of the wood fires. The camphor wood is brought to the stills and chopped across the grain into brittle chips by means of a peculiar short-handled gouge-like adze. The boiling-pan is filled with water through a small bamboo pipe. The chips are tightly packed in the cylinder tub, which is separated from the boiling-pan by a perforated wooden bottom. The fire is lighted in the fireplace under the boiling-pan (there is no flue) and the steam, passing through the chips in the cylinder, finds its way into the condenser. The top of the condenser-box has a coaming all round to retain the water for cooling which lies about half

Cost of still.

Location of still.

Camphor maker.

Cutting wood into chips.

Charging the cylinder.

Distillation.

Cooling the condenser.

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an inch deep. The water for cooling is brought to the spot through a bamboo pipe from a stream or spring perhaps a couple of hundred feet, or more, away. On reaching the condenser, the steam from the cylinder full of chips, is made to zigzag through five or more compartments, formed by partitions. Here the steam condenses to water, which water finds its way out underneath the edges of the condenser, and mixes with the water in the containing trough. The camphor and oil, carried over by the steam from the chips in the cylinder, remain floating on the water within the condenser. In more than twelve and less than twenty-four hours steaming, the chips in the cylinder, having yielded all their camphor, are drawn out of the cylinder by an opening in its side just above the perforated bottom. The opening in the side of the cylinder being closed, the top of the cylinder is removed and a fresh charge of chips rammed in; then the top is replaced, luted on, and the bamboo pipe leading to the condenser is re-adjusted. The operation then proceeds as before. The spent chips having been dried by the waste heat from the fire, serve as fuel, but have to be supplemented by some common wood fuel. The chips must be steamed for not *less* than twelve hours. In Kyushu, working on rather young camphor wood, about twenty-five charges are worked off before the receiver is opened and the contents removed. It should then contain, floating on the water in the trough, about a picul of camphor-jelly, or one hundred and thirty-three

Water supply.

Manner of condensation.

What becomes of condensed steam.

Camphor in condenser.

Spent chips.

Recharging cylinder.

Fuel used.

Twenty-five recharges before the condenser is opened.

A picul in the condenser.

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pounds of a mixture of camphor, camphor oil and some imprisoned water. Thus the yield is a little more than five pounds of "jelly" each day. This jelly-like substance is ladled out into a basket beneath which stands a wide-mouthed jar. Most of the oil and water promptly drain away into the jar, leaving the camphor in the basket in the form of minute crystals. The partly drained camphor is next packed in old five-gallon kerosene cans, or in tubs, and carried on the back of a pack-ox to the "godown" in the town. Here it is kept in large bins for further drainage, and in due time, is packed in wooden tubs and sent to Hiogo, Kobe or Osaka. The oil, too, packed in American kerosene cans, is forwarded to Osaka, where the dissolved camphor is extracted to form "second quality" crude camphor. It is difficult to estimate the wages paid to the camphor men, as they are paid partly in rice, partly in dried fish, and in money besides.

Daily yield.

Emptying condenser.

Draining and packing camphor.

Transport to "godown."

Shipment.

Wages.

The man who cuts the wood into chips is allowed "three boxes of rice" a day, as chopping is reckoned to be hard work.

Cutting chips hard work.

So much for the actual operation of distilling the camphor from the wood. Now let us consider the appliances, and the conditions under which they are used. Camphor making is generally carried on in wild and remote places; the stills having to be erected near the trees that are to be felled. The still, or group of stills, is usually placed at some distance up a little valley, or ravine, where there is command of running water. There must be room enough for the still-

Stills are usually in "back-woods."

Up valleys or ravines.

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sheds and for the camphor maker's hut. It is not necessary to have a road to the spot. A path suffices. The heaviest part of the plant is the boiling-pan, and two men can carry that anywhere with ease. The rest of the plant can be brought up in pieces. Clay for the fire-place, etc., is generally found on the spot.

Hut alongside still.

Road unnecessary, path sufficient.

Could the plant be improved? I think the fireplace (without a flue) the boiling-pan, perforated bottom, cylinder and bamboo connecting pipe, are all most inexpensive and admirably suited for the work they have to do. I may say here that the Japanese show a remarkable talent for obtaining the greatest possible results with the simplest means. The condenser, however, I believe could easily be given better protection. It is mostly owing to faulty condensers that dirt gets into the camphor. Even in Japan it stands out in the open, exposed to the weather. Dead leaves, dust, and dirt of all kinds find their way into the wooden receptacle in which the condensing box stands. When it is time to remove the condensed camphor and oil, the inverted condenser-box is simply lifted up like the lid of a trunk, and then the dirt in the trough has an excellent chance to mix with the camphor-jelly as they scoop this latter out. The condenser-box is often inverted over the water in the trough ready for the next twenty-five charges without the trough having been cleared out at all. With a proper condenser, there is no reason why the camphor should pick up dirt. Japanese methods of collection are none too

Could "plant" be improved?

Yes. The condenser.

Condensers are not dirt proof.

Careless way in which gum is removed from condenser.

No reason for camphor to be dirty.

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Formosan carelessness.

perfect, but in Formosa things are much worse. The Hakka people there, who follow the Japanese method, are not the neat, painstaking people that the Japs are. Consequently the condenser-top and the trough are in a filthy state.

The camphor "godown."

Now we will follow the camphor to the "godown," or fireproof depôt, in the village or town. Here it is placed in large bins, where it remains some time to allow the oil and water to drain away by escape holes at the bottom. When the contents of the bins are considered dry enough,

Packing in tubs.

they are packed in old saké tubs ready for shipment to Kobe, Osaka, or to the collecting port for these towns. When the merchant buys these tubs of camphor, he has them set up on edge to drain further, and then claims for loss in weight.

Camphor improved by keeping.

After keeping the camphor for a few months in the warehouse its appearance is improved. It becomes whiter, and the crystals increase in size.

"Pink" camphor.

People sometimes enquire for Japanese *pink* camphor. The pink colour is not really there as it leaves Japan. After being two or three months in the wooden tubs on the voyage to Hongkong or England it "gets to look pinky," as Mr. Lucas, of Kobe, says.

Yield of trees.

What yield of gum may be expected from camphor trees? This is a difficult question to answer. A fifty year old tree in first-rate sap should yield

Very variable.

a picul. But the yield is very variable; from twenty to fifty pounds of chips are required for

Richest part of trees.

one pound of crude gum. The bottom portion of the trunk and the upper part of the root yield the

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most gum. Leaves and twigs of oldish trees will yield one and a half per cent. of gum. Mr. Nakamura charged a cylinder with leaves and twigs tightly rammed down, and estimated that the result was as good as if ordinary chips had been used. I am sceptical as to the figures he gave me.

Leaves and twigs.

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CHAPTER III.

THE CAMPHOR TRADE IN JAPAN.

HAVING followed the crude camphor (called *shono* by the Japanese) into the hands of the dealer, I will now give some account of the trade as carried on by the natives.

Camphor is quoted on the market in quantities of 100 kin, or catties, the equivalent of 133 pounds. In the China trade this quantity is called a picul.

Four grades of quality are recognized by dealers; namely, Perfect-dried, Well-dried, Local, and Residue. By Perfect and Well-dried is meant the gum in a good, dry state; by Local, that in an original state just brought from local districts; and by Residue, that which is deposited from the oil.

Of these four grades, the Perfect-dried is the one which the foreign merchant seeks to buy, while the Well-dried is what the native dealer tries to sell to him. The Local is only handled by dealers. The Residue, being cheapest, when not used for adulterating the higher grades, is shipped to China and Korea for local consumption.

Two kinds of camphor makers.

In Kyushu Island, where the bulk of the Japanese camphor is now produced, a good

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many of the camphor workers are men from Tosa province, in the neighbouring island of Shikoku. Some are professional camphor makers who move from place to place, buy the trees on their own account, and extract the camphor, which they sell to dealers. Others are employed, or financed, by the camphor merchants of Nagasaki, Kagoshima, etc. These are paid partly in money and partly in provisions. There are seven camphor and camphor-oil merchants at Nagasaki. Messrs. Inematsu, Wakiyama, the Mitsui Bussan Gomei Kwaisha, Naito, Kawai Nakamura and Kato. None of them deal direct with European firms. At Miyasaki there is Mr. Matsuda, who travels as far as Formosa. At Osaka I was given the names of three merchants, the Nisshin Boyeki Kabushiki Kaisha (Kaisha = Co.) Mr. Fukunaga and Mr. Fujisawa, but there must be more of them, as I believe Osaka is the real centre of the camphor trade of Japan. At Kobe there is a wealthy Baron Sumitomo, who has a camphor refinery; "The Nippon Camphor Co., Ltd.," a native firm, who have the largest refinery in Japan; and Mr. Ikeda (who recommended me not to go to Tosa but to Kyushu) and Mr. Sudzuki. Messrs. Lucas and Co. (English) have a good refinery where they make "flowers of camphor" for pressing into "tablets." Messrs. Flood and Co. have a large camphor "godown" but no refinery. They buy, drain and "grade" camphor for the American market. Most of the old established foreign firms at Kobe have, at some time or

Native camphor-dealers.

Osaka the trade centre, but Kobe the port.

Kobe refiners.

Flood and Co.

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other, had dealings in camphor, but it is a troublesome business; a Japanese middleman or "go-between" is always employed. The three refineries at Kobe supply the Indian and Australian and American market—very little of their make ever comes to Europe. The refining business is an increasing one.

"Go-betweens."

Camphor shipped from Formosa to Kobe.

Besides the camphor made in S.W. Japan and in Kyushu, nearly all of which finds its way to Kobe or Osaka, there were brought from Formosa last year 3,000 piculs of the crude drug, mostly from the northern camphor region, and packed, Japanese fashion, in tubs. 800 piculs of crude camphor were extracted at Osaka from oil brought from Formosa last year. This imported oil may contain nearly half its weight of dissolved camphor. It used to be exported duty free from Formosa, whereas the crude camphor has to bear an export tax of 10 yen per picul. Since April, 1898, however, an export duty of 3 yen per picul has been imposed upon oil shipments. This new export duty of 3 yen on the oil will interfere with the business of the Osaka oil refiners who made money by extracting the dissolved gum.[1] The camphor extracted from the oil by the Osaka people is of a beautiful white colour. It is of inferior quality, however, and is disposed of by blending with the ordinary crude gum. It is soft, and no amount of draining will draw all the oil out of it. So Dr. Boyer, Messrs. Flood's "camphor technologist," told me.

Camphor extracted from the oil.

New export tax on oil.

Fine looks, but bad quality of oil-camphor.

Refiner's camphor.

The crude camphor used for refining is

[1] All the export duties were abolished in July, 1899.

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generally very dirty stuff, often of a dark gray, or almost black, colour. The dirtiest of the crude is picked out and set aside for refining, and the waste in the process sometimes amounts to 45 per cent. It is mostly converted into "flowers," some into "sublimed" and a little into "rings." The flowers are pressed into "tablets" by hydraulic power.

"Flowers," "sublimed," and "rings."

The camphor men of Japan all complained of the low price of the drug. At 45 yen per picul camphor can only be worked at a profit provided the conditions are very favourable. They say they are undersold by Formosa. As a matter of fact, a good deal of Japanese skill and capital has lately transferred itself to the Formosan camphor field.

Present low price of crude.

Formosa underselling.

It remains to be seen whether Kobe will increase its hold on the Formosan camphor trade, and so maintain its position as a camphor centre. The Kobe and Osaka merchants will struggle to do so. Anyhow, the Japanese camphor makers established in Formosa are now sending their tub-packed goods to Kobe rather than to Hongkong.[1]

Will Kobe and Osaka remain trade centres?

To me there seems every probability of Kobe's importance falling off as a shipping port for camphor.

Crude trade will fall off.

On the other hand, the Kobe business of camphor refining will probably increase, as it is in a good position to work up all the dirty crude that is produced. Camphor refining requires carefully constructed and costly apparatus and very

Refining will increase.

[1] Hongkong is now gaining on Kobe.

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skilful manipulation. It is not likely that it could be carried on advantageously by even large growers or makers of the crude.

The consumption of camphor in the United States has been decreasing during the past ten years, while the price has been increasing. Under the tariff act of July, 1897, the duty on refined is six cents. a pound, while the crude is admitted free.

A trade "combine."

As to the possibility of a Japanese camphor "combine," or the establishment of a government camphor monopoly. With the exception of the camphor producing district in China, which does not appear to be of much account, the source of the world's supply of camphor lies in Japanese control. The Japs are quite aware of the fact, too. It is also a fact that the Government of Japan is much in want of new sources of revenue. In Tokyo, and also in Taiwan, I sounded the officials as to the likelihood of a camphor monopoly being established. The result of my inquiries was negative. The scheme would be difficult enough to carry out in Japan, for the camphor interests are very scattered. In Formosa the plan would hardly be possible until the country is more settled. There they find it hard enough to ensure the collection of the present 10 yen export duty; Japanese men of business who are developing the camphor industry in Formosa do not apprehend any such change. The export duty, if it could be all collected, would yield a very satisfactory and inoppressive revenue.

World's supply in Japanese hands.

Japanese Government hard up.

Monopoly?

Formosa at present too disturbed.

No monopoly expected at present.

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There has lately been established in Japan a government monopoly in leaf tobacco. This has already caused a good deal of friction, although it is not yet in full working order. The Japanese Government official, though poor and much underpaid, is a man of strict integrity; but sometimes he has been known to abuse the trust reposed in him—witness the great frauds discovered in the Kobe customs house early this year.

New tobacco monopoly.

Officials ill-paid, and not always to be trusted.

In Formosa the only government monopoly, so far, is that of opium for smoking.

As to combines. Conditions of trade and finance are not yet ripe for this style of trading. In April last, the average rate of interest was about 15 per cent. The Mitsui Bank (the Mitsui family are the "Rothschilds" of Japan) was allowing depositors 10 per cent. interest.

Combines.

Not likely.

High rate of interest.

There are numerous joint stock banks in Japan. They are managed rather on American than on English lines. Savings banks are common. There is only one Bank of Emission, the "Nippo Ginko."

Financial facilities.

At the present time, money is very scarce in Japan. The capitalists of the country are invested "up to the hilt." Foreigners are not allowed to hold shares in Japanese undertakings. The railways, steamship lines, tramways and spinning mills have all been established with home capital. The government expenditure greatly exceeds the revenue. Next year, the import and export duties will all be revised, after remaining unaltered for thirty years. The currency is now on a gold basis, the yen being worth two shillings and one halfpenny.

Scarcity of money.

No foreign shareholders in Japanese undertakings.

Currency.

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CHAPTER IV.

STATISTICS.

EXPORT OF CAMPHOR FROM JAPAN, FROM 1884 TO 1897.

Year.	KOBE. Value.	KOBE. Weight.	NAGASAKI. Weight.	NAGASAKI. Value.	Exchange.
					Pence.
1884	£68,860	4,387,866 lbs.	1,839,496 lbs.	£27,930	43
1885	59,082	3,123,477	2,166,091	38,444	42
1886	114,789	5,214,720	2,047,472	39,822	40
1887	140,467	6,608,000	2,008,028	38,200	38
1888	117,550	4,020,800	1,689,452	39,276	37
1889	182,346	5,434,240	1,180,017	33,777	37½
1890	283,286	5,958,400	819,253	40,383	40½
1891	236,940	5,292,120	556,115	22,832	38½
1892	174,603	3,837,120	207,677	7,703	34½
1893	162,158	3,194,240	107,737	4,800	30½
1894	107,476	2,752,960			25½
1895	164,635	2,965,760			26
1896	118,433	2,096,040			26
1897	132,052	2,138,948			25

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JAPANESE AND FORMOSAN EXPORT COMPARED.

Year.	Japan—lbs.	Formosa—lbs.	Total—lbs.
1884	6,227,362		6,227,362
1885	5,289,568		5,289,568
1886	7,262,192	125,818	7,388,010
1887	8,616,028	367,262	8,983,290
1888	5,710,252	511,168	6,221,420
1889	6,614,257	556,864	7,171,121
1890	6,777,753	965,552	7,743,305
1891	5,848,235	2,517,424	8,363,677
1892	4,044,797	2,339,008	6,383,805
1893	3,301,977	4,442,368	7,744,345
1894	2,752,960	5,272,848	8,025,808
1895	2,965,760	3,993,685	6,959,445
1896	2,096,040	5,070,912	7,166,952
1897	2,138,948	4,205,488	6,344,436

IMPORT OF CAMPHOR INTO THE UNITED STATES.

	CRUDE CAMPHOR—Duty free.			REFINED CAMPHOR—Dutiable.			
Years.	Quantities.	Values.	Value per Pound.	Quantities.	Values.	Value per Pound.	Rates of Duty.
	Pounds.			Pounds.			Per lb.
1887	2,873,184	$352,861	$0.12	307	$ 45	$ 0.15	5 cents.
1888	2,779,719	304,460	.11	61	7	.13	,,
1889	1,974,500	293,031	.15	72	10	.15	,,
1890	2,061,370	421,385	.20	87	37	.43	,,
1891	1,666,074	468,025	.28	63	21	.33	4 cents.
1892	1,955,787	447,634	.23	56,820	17,361	.31	,,
1893	1,723,425	446,584	.26	156,291	51,229	.33	,,
1894	1,323,932	309,407	.23	137,882	44,233	.32	,,
1895	1,509,713	284,958	.19	271,164	83,382	.31	(*)
1896	943,205	328,457	.34	153,912	68,785	.45	(*)
9 mths. Mar. 31. 1897	855,285	207,137	.24	155,027	52,811	.34	(*)

* Ten per cent. ad valorem.

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AN INQUIRY CONCERNING

CAMPHOR IN FORMOSA

1898

February, March, April

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CAMPHOR IN FORMOSA.

CHAPTER I.

FORMOSA.—A SHORT ACCOUNT OF THE ISLAND.

FORMOSA,[1] called Taiwan[2] in the Far East, is a large island lying off the east coast of China, opposite the Province of Fuh-kien (Foo-keen) from which it is separated by the Formosa Channel, varying in width from ninety to two hundred miles. The east coast of Formosa, the one farthest from China, is washed by the Pacific.

Native name.

Situation.

The Island is about two hundred miles long from north to south; its average breadth from east to west is about fifty miles. It is about half the area of Ireland.

Size.

Through the Island's centre, from north to south, rises the Ta-shan range of mountains, of from seven to twelve thousand feet in height, some of whose summits are visible from the Chinese coast near Amoy. A low alluvial plain of great fertility extends from the western base of the Ta-shan mountains to the sea. This plain

The Ta-shan Mountains.

Fertile western plain.

[1] From the Portuguese *Ylha Formosa*, "Beautiful Island."

[2] Meaning in Chinese, "terraced bay."

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Eastern Formosa.

was often called the Granary of China. From the crests of the mountains, looking eastwards, stretches a series of hills, plateaus and ravines, ending at the water's edge in cliffs of from three thousand to six thousand feet in height; said to be the most precipitous in the world. The

Forest Region.

mountains are covered with dense forest, and the scenery is often magnificent. The Island may thus be divided into two parts, the mountains and the plain.

The Tropic of Cancer falling about the centre of the Island, only the southern half lies within the tropics.

Climate.

Climate.—The chief factors in the Island climate are the "monsoons." The north-east monsoon wind blows all through the winter and the south-west monsoon all the summer. Under these conditions, as naturally ensues, there is considerable variety of climate.

In North Formosa.

In North Formosa, the flowers are in bloom from January till December. The whole country is green, foliage is renewed as fast as it decays while frost or snow are unknown. The rainfall is everywhere very great, but heavier on the eastern than on the western side. The tropical

Humidity.

sun, aided by the prevailing dampness, causes a

Rapid growth.

very rapid vegetable growth. The rocks are clad in moss and covered with creepers; the trees in their wild state are festooned with climbing plants, while parasites grow on parasites, and on these, parasites again.

Malaria.

But if growth be rapid, so is decay; hence the malarial fever which for European and native

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alike makes travelling within the forest region so trying. The climate of North Formosa is considered particularly bad for Europeans; that of South Formosa, being drier, is more healthy. Formosan climate.

Formosa is subject to hurricanes known locally as typhoons which often do great damage. Typhoons.

The rivers of the Island are, with one exception, torrents of the worst kind, and not even navigable for canoes. The exception is the Tamsui River of North Formosa which steamers can ascend for two or three miles, and junks and steam launches for some ten miles from its mouth. The three tributary rivers of the Tamsui, the Keelung, the Tokoham and the Sintiam, are used by native craft for relatively long distances, much camphor being brought down by way of the Tokoham river. Rivers. The Tamsui and its feeders.

The only port suitable for the largest steamers is Keelung, in the extreme north of the Island, and even Keelung is much exposed to the north-east monsoon. Hobé, at the mouth of the Tamsui river, is obstructed by a bar which can only be crossed by steamers of light draught. The tide does not help very much, the total rise and fall being only six or seven feet. This is unfortunate, as Hobé (or Tamsui) is the chief commercial port. In South Formosa there is the small port of Takao, suitable for junks. Anping, near the large town of Tainan, in South Formosa, is only an open roadstead. There are several small shipping places on the west coast, the most important of which is Rok-ko, whence a good deal of camphor is shipped. Ports. Keelung. Hobé. Takao and Anping. Rok-ko.

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A little to the north of Rok-ko (Lok-kang in Chinese) is Goche whence camphor is also shipped. On the east coast, there are no ports, only landing-places.

Communications.

British steamers.

Jap steamers.

Formosa is connected with Hongkong by two lines of steamers—the Lapraik, Cass Line, and the Douglas Line. In 1898 British shipping in Formosan waters amounted to over eighty per cent. of the whole steam tonnage entering from abroad. There are also two Japanese lines connecting Formosa with Japan—the lines of the "Nippon Yusen Kwaisha" and the "Osaka Shosen Kwaisha." The latter concern has small coasting steamers that make the tour of the Island at intervals. These coasters act as feeders for the Keelung Line which otherwise would get little freight. Communication with South Formosa is often stopped owing to the difficulty of landing at Anping during the south-west monsoon. Sometimes for months together no camphor can be shipped by Messrs. Bain and Co., and Julius Mannich, merchants whose head-quarters are at Tainan-fu and who ship some of the produce of the Chip-Chip region, South Formosa.

River boats.

On the Tamsui River and its tributaries there are very cleverly constructed river boats. These are fitted with large sails, and are capable of sailing up the rapids of the Tokoham River and reaching the borders of the Savages' country.

Roads.

There is but one real high-road in the Island —the military road from Keelung to Tainan. Only the northern part of it is suitable for light

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wheeled traffic. The road itself is not so bad, but the numerous bridges are weak, and are frequently washed away by floods. The country districts are served by paths about a foot wide, often paved with flags. Where these paths ascend steep hills, the stones are set as steps. The narrow paths have, generally, flooded rice fields on each side.

Transport.

Goods are universally carried by coolies by means of shoulder-poles. In this fashion a coolie can carry one hundred pounds with ease. Barefooted, he has no difficulty in crossing the very shaky bamboo bridges which are a terror to the European, though *he* carries no load. Well-to-do people are carried from one place to another in chairs on the shoulders of coolies.

Maps.

I found no good map of Formosa. It is difficult to identify places. The same place will have several quite different names. Names, too, are frequently changed. It is thought to improve the "luck" of a place by giving it a new name.

Place names.

Taipeh, the capital.

The present capital of Formosa is Taipeh, Tai-peh-fu, Taihoku or Daihoku. It bears all these names and they are each correct. It is a small town, surrounded by stone walls situated in a wide plain, close to the Tamsui River, and in the immediate neighbourhood of Twatutia, or Daidodé, the old Chinese treaty port and chief commercial centre in North Formosa. In Taipeh are the government offices, the governor's palace, barracks, and the opium factory. No Europeans live there.

Twatutia, the European centre.

At Twatutia are the "hongs" (warehouse,

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office, and residence combined) of the European firms. These are mostly in the tea trade. At Twatutia is the "hong" of Messrs. Butler and Co. (Germans in spite of their name) the only European firm in North Formosa who are interested in camphor.

Twatutia and the neighbouring town of Banka, a little higher up the river, have a very large Chinese population, probably fifty thousand between them. At Taipeh the majority of the inhabitants are Japanese. The European population of North Formosa does not amount to thirty. When I was there, I was told there was no European woman in the country.

Taipeh very Japanese. Europeans.

Twatutia and Banka are connected with the capital Taipeh by good roads. Taipeh itself is fast becoming quite Japanese and being kept remarkably clean. Several Japanese banks have opened branches there. There is also a fair Jap hotel, where I lived during part of my stay. The finest building in the town is the new General Post Office, in semi-European style. There is an excellent water supply, derived from artesian wells. There is also an electric light plant. During the hot season ice is manufactured. Steam launches carry passengers (fare, for natives ten cents, Europeans free) to Hobé (Tamsui) at the mouth of the river. Taipeh is well supplied with Japanese goods. European provisions are sold at the Chinese stores in Twatutia. Altogether, these are rising places.

Banks.

Post Office.

Water, electricity and ice.

Stores.

There is a railway from Taipeh to Keelung, and another line from opposite Twatutia to

Railways.

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Shin-chiku (Tuck-cham). These lines formed one railway until last year, when the long bridge across the river was carried away by a flood. The total length of the railway is nearly fifty miles. The line is of a three feet six inches gauge. Permanent-way, rolling-stock, and locomotives are all poor alike, the road having been made by the Chinese Viceroy Liu-ming-chuang. While employed in making a difficult half-mile of the line between Taipeh and Keelung, five hundred coolies died of fever.

There are two passenger trains a-day each way, and these are always crammed with travellers. The fares are low. The Formosan Chinese show every disposition to use the line. At times a good deal of camphor is carried by it to Twatutia for shipment. The stations, even the main one at Taipeh, are all very primitive.

Formosan country.

Having got to the railway, I may now say something about the country.

Highlands and lowlands.

The north-west region of Formosa, visited by me, may be divided into lowland and highland. The lowlands, reaching from the west coast to the foot-hills of the mountains, form a plain, kept in the highest state of cultivation by Formosan Chinese, who raise large crops of rice, sugar, bananas, sweet potatoes, etc. In this plain are some half-dozen populous walled towns thoroughly Chinese in character, and inhabited by people who seem to work from morning till night. Most of the plain is under irrigation, and the natives make use of many ingenious ways of storing and raising water. In this plain there

The plain.

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are no camphor trees, nor indeed many trees of any kind, but the bamboo is extensively grown.

Foot-hills. To the east of the maritime plain are the foot-hills of the mountains, under partial cultivation.

Tea. A great deal of tea is grown here, on land that not very long ago was covered with woods.

Mountains. East of the foot-hills is situated the main chain of mountains, forming the backbone of the island. It consists of several parallel ranges. I have counted sometimes four or five ranges, rising one behind the other. These mountains

Forests. are covered with dense forest, and in these forests the camphor trees are found.

Formerly one great forest. Not so very long ago the whole island, there is reason to suppose, was covered with forest. Here and there in the plain a few camphor trees are still found in woods and small patches of tree-growth, that the Chinese have not taken the trouble to cut or burn down. In Twatutia, itself, there is a fair-sized tree that is far older than the present town. On the hills north of the Tamsui river there are many young camphor trees amongst what, in America, is called the "second growth." But such trees are rare in the lowlands. The Chinese have no love for ornamental trees, whereas the Japanese are great tree planters.

Inhabitants. Now for a few words about the inhabitants of Formosa. These consist of Chinese, Savages and Japanese. The Chinese are the first in numbers, intelligence and influence. These immigrants

The Chinese or Hok-los. of old standing (from Fuh-kien) are called Hok-los. They are a very clannish people, the "Lim"

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family clan being the most numerous; sometimes a whole village will be peopled by nothing but Lims. Amongst Chinese immigrants of old standing, we must class the Hak-kas (strangers). The Hak-kas live amongst the foot-hills, to the east of the Hok-los. Coming from south-west China, the Hak-kas differ a good deal from the Hok-los. The Hak-ka women do not bind their feet, and have much more freedom than their Hok-lo sisters. The Hak-kas are important to us, as they furnish most of the camphor workers. They serve, too, as backwoodsmen, cutters of rattan and pioneers in the mountain regions. Compared to the Hok-los they are not numerous. They are better fighters than the Hok-lo, or ordinary Chinaman, and sometimes make a stand against the attacks of the Savages.

Hak-kas, about twenty thousand?

The Chinese divide the Savages into three classes: "*Pe-po-huan*" (barbarians of the plain) living on the east coast; "*Chi-huan*" (raw barbarians) unsubdued mountaineers; and "*Sek-huan*" (cooked barbarians) who have settled down amongst the Chinese. There is another race of barbarians, the "*Ang-no-huan*" (red-haired barbarians) or English.

Three classes of Savages. Plain savages. Raw savages. Cooked savages.

The Japanese have only been four years in the island, but are already fairly numerous. They have thirty thousand troops of all kinds scattered about. Officials, shopkeepers, and coolies are plentiful. I never saw a Jap farmer in Formosa. Some Jap mercantile houses have agencies in Twatutia and Taipeh. At several of the country towns there are now Japanese inns.

Japanese.

Thirty thousand troops.

Coolies.

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A bad Jap inn is better than the finest Chinese hotel. Japanese coolies, though relatively quite small men, have the reputation of being very brutal and overbearing to the Chinese, *Hok-los* and *Hak-kas* alike. The coolie wage is much higher in Formosa than in Japan.

Japs find Formosa costly.

In the four years that the Japanese have been in Formosa, they have spent, and lost, a great deal of money there. For one thing, there have been constant insurrections, outbreaks of armed robbers, and murderous attacks on travellers, going on over most of the country. These troubles are not caused by the Savages, but by the *Hok-lo* "broken men." Captured raiders have been beheaded and shot wholesale, but the trouble still goes on. It is said that the rebels receive monetary aid from China. Several of the country towns I passed through or stayed at, were half in ruins from recent fighting. The country is not well suited for cavalry or artillery. I believe there will soon be an end to this disorder. The "opium smokers" and "broken men" will gradually die out, or go away, and leave the people in peace. The Government will then have leisure to take the Savages in hand. At present the Savages are kept quiet by feasting and making much of them. They are entirely looked after by the "Bukonsho," or Japanese Bureau for Savage affairs.

Rebels.

Robbers.

Who are the Rebels.

Stern measures of the Japs.

Island will quiet down.

Japanese officials.

Good and bad.

The Governor of the Island, the Prefects and head military officers, are generally excellent and very enlightened men; on the other hand, the petty officials in the civil service are too often

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shameless and ignorant fellows. They were selected and sent out at a time when it was thought that "any fool was good enough for Formosa."

Service in Formosa is by no means popular. In the early days of the occupation the climate proved very fatal to the new-comers, but wider medical knowledge and more attention to sanitation have now much reduced the previous death rate. Nevertheless, the Japanese returning home from serving in the Island are more or less soaked in malaria.

Compared with English in India.

Though the Japanese may behave as if they had come to stay, they certainly do not have the same standing in Formosa that the English have in India. Apart from the troops, most of the Jap immigrants are coolies attracted by higher wages, small storekeepers or prostitutes. Of these latter there are said to be eight hundred confined to the town of Banka, near the capital.

Japs will possibly deteriorate.

Japanese and Formosan children play together in the streets, and the little Japs, who have no swear words of their own, soon learn to become as foul-mouthed as their Chinese playfellows. It is to be feared that, in time, the Japs may lose some of their own good qualities without acquiring those peculiar to their Chinese neighbours. Both nations are supposed to have the same religion. At present nearly all the Formosan temples are in military occupation, being used for stores, or as barracks. There has been a great decrease lately in the bigoted, anti-Christian spirit, once common amongst the Formosans.

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CHAPTER II.

THE CAMPHOR TREE IN FORMOSA.

Home of the camphor tree.

FORMOSA has been described as the "home of the camphor tree." Some people imagine that the tree is as common in Formosa as pine trees in Norway, or hornbeam in Epping Forest. That is quite a mistake. On the western or

Plain devoid of camphor trees.

maritime plain of Formosa, camphor trees are exceedingly rare; less common than cedars in England. There are just a few camphors left in the plain, enough to show that the great

Rare even in the foot-hills.

forest once extended to the sea-shore. Even on the hills at the foot of the great mountain range they are far from common, being left standing only in dry, inaccessible spots. The Japanese

Jap and Formosan trees identical.

and Formosan trees are identical. In order to see the camphor as a large forest tree, it is necessary to go as far as the debatable land between the Savage territory and the *Hak-ka*

Where the trees begin to be found.

settlements. There they are found in all sizes; some of the very largest trees in the primeval

How they grow in forest region.

forest being camphors. They grow, not only in the narrow valleys or gulches, but on the steep hill-sides and on the table-lands. Sometimes they are so numerous as almost to form a grove, but I only remarked this twice in my wanderings. I was surprised to find a good many hollow

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trunks amongst the old camphors. I had imagined that the gum, acting as an antiseptic, would protect the tree against insects and rot. Perhaps not against white ants, whose handiwork I saw on every side, though I never set eyes on a white ant itself.

Hollow trunks common.

White ants.

The camphor is more or less common all through the forests of the central range, at least as high as four thousand feet above sea-level, the limit of my excursions. One of Butler and Co.'s men told me it extended as high as six thousand feet. It may go even higher on the east or warmer side of the island. The eastern slope of the great range is little known. No camphor has come from there yet. It is reported to be as rich in camphor as the western slope is, and I see no reason why it should not be.

What is the limit of height above sea-level?

Eastern slope possibly more suitable than the western.

In what districts have the camphor trees been all destroyed? The extreme north—all to the north of the Kelung and Tamsui rivers—is entirely worked out. The hilly district south of the mouth of the Tamsui river is worked out also.

Worked out districts.

The foot-hills from Miauli to Twa-ho are worked out, and some places further east have been "skinned over." The accompanying Map will show what reserves are left untouched. Some of the parts shaded in blue are probably situated above the camphor level, Mount Morrison, for instance. As regards drawing supplies from the east coast: that would only be possible during the summer months, when the south-west monsoon blows. At other times it is impossible

Worked out districts.

A Map showing reserves.

Supplies from east coast.

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Butler's man saw eastern slope.

to land there. Mr. Siebenman, one of the firm of Butler and Co., was on the eastern slope five years ago and reported it to be rich in camphor and untouched.

I have reason to think that there are very few camphor trees at the southern end of the Island, which tapers off to a point.

Camphor wood used as timber.

Some large camphor trees (probably in those regions where there is no water for the stills) are felled and cut into fine thick planks. These are shipped to China, where they are used to make coffins for rich people.

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CHAPTER III.

Camphor Making in Formosa.

Three camphor centres.

THERE are three centres from which camphor working is carried on. First, the northern centre, or Tokoham (Daikokan) region. Daikokan is a pretty town on the Tokoham River, which is navigable for boats from Daikokan to Tamsui. The camphor camp there commences about ten miles behind the town and extends some four or five miles into the interior. This field used to be worked by Hak-kas. Now it is entirely in the hands of the Japanese, who employ none but Japanese workers. There are about one hundred and twenty stills working, of which Nakamura's concern owns sixty or seventy. At Daikokan I interviewed Nakamura's manager. I was not allowed up to the camp on account of quite recent murders. The road to the camp was unsafe, though the camp itself was all right. Here the camphor is worked quite in the best Japanese style. The trees are properly cut and utilized, and a clean crude camphor produced which, after being vatted in Daikokan town, is sent down the river in boats and shipped in tubs from Tamsui to Kobe. It is a new undertaking, started in August, 1897. It was here, in March last, that Japanese camphor workers were

First, Daikokan.

Japanese camphor camp.

No Hak-kas.

One hundred and twenty stills.

Good work, no waste.

Produce packed in tubs and shipped to Kobe.

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Japanese decapitated.

first beheaded by the savages. The savages had always been well-treated by the Japs, so this event caused surprise. My friend Hashiguchi, the Prefect of North Formosa, went up himself to interview the chiefs, who said they *must* have heads; be they Jap or Hak-ka, it did not matter.[1] How this business eventuated I have not heard, but Prefect Hashiguchi was recalled soon after. The authorities seemed very anxious not to employ force. The Daikokan camp is the model Japanese camphor settlement. Should it succeed, others will be established further south; the idea being to arrange for Japanese settlements within the Hak-ka line. Daikokan is at the head of navigation on the Tokoham River. About one hundred and fifty Japs were at work there.[2]

Prefect visits Savages.

Model Jap camphor camp.

Others to be established.

Second Camphor region, middle, or Bioritsu section.

The next important camphor station is at Miauli or Bioritsu, a town situated at the mouth of several valleys running up into the interior, in, what might be called, the middle camphor region. I ascended the principal valley to Twa-hô village, where I lodged at the house of a camphor man, Mr. Ngo Chong. Mr. Ngo Chong makes still-fittings in the Japanese style. The Chinese have recently adopted the Japanese style of working camphor. Twa-hô is at present the most productive centre in the island, employing as it does eight hundred stills, and it has been a busy centre for twenty years. The village was first settled by Hak-kas nearly forty years ago. For four or five miles round right up to the

Twa-hô.

Mr. Ngo Chong, Hak-ka maker of Jap stills.

Twa-hô, chief camphor village in Formosa.

[1] A Savage superstition.

[2] Now more than a thousand.

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Savage boundary, all the camphor trees have been cut. They are now digging up the roots for making camphor. Unless new forests are opened, work will cease in a year. The Hak-ka camphor makers often work in a very wasteful manner. Instead of cutting a large tree down, they cut chips from the living trunk with their adzes. This they do all round the trunk until the tree falls. I saw many of these partly cut up trunks in the woods. They erect a stage and commence cutting chips at a height of ten or twelve feet from the ground. The stump is next cut into chips until it is level with the ground. The upper part of the trunk and all the branches are allowed to lie just where they fell. Now they are going over ground formerly cut over and digging up the roots, the part of the tree richest in camphor.

Trees all felled. Now at work on roots.

Wasteful way of working.

At Twa-hô there is an important station of the "Bukonsho" or Savages' Bureau. Here they entertain the Savage mountaineers, making them drunk on *Samshu* and Saké. Herr Greiner, Messrs. Butler's representative, has a household in Twa-hô, and has lived there seven years. He gives money out for the erection of stills by the Hak-kas, receives and ships the produce. The camphor is mostly packed in lead-lined cases, and often packed very wet. Mr. Yab-su-tiang, a Hakka and head-man of the village, treated me to a lunch with "Fragrant Wine" and Chinese "Medicine Wine," followed by a mouldy cigar. He then took me a couple of miles up the valley to call on a friend of his, a Hak-ka married to a

Feasting-Savages.

The one European in the entire camphor region.

Head man of Twa-hô.

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Savage woman. The latter, the Hak-ka, hoped to get leave from the Savages to work camphor on the neighbouring mountain, Ma-la-pang, which, in his flowery language, would give occupation to "one thousand stills for five years." They were badly in want of fresh forest. I also visited a Japanese firm occupying a good Chinese brick house in a village four or five miles up the valley. One of the firm spoke some German. They took me to see some of their stills situated in a steep ravine in the midst of overpowering vegetation. Here they were cutting up trunks, not roots.

Fresh camphor mountains.

A pioneer Japanese firm.

The stills here were worked by Hak-kas, no Jap workmen being employed at Twa-hô. This Japanese firm send the camphor down to Bioritsu, where the duty is paid and it is packed in tubs and shipped from a small port, Guchei, to Tamsui, and thence to Kobe. By far the greater part of the Bioritsu camphor, all Butler and Co.'s for instance, is shipped to Hongkong. I spoke to the Japs about Tiang-kié-ving, the Hak-ka with a Savage wife. They thought he ought to be hanged for murders he had committed. In this region some of the old Chinese "stoves" are still at work, but only where condensing water is scarce. All the water these old "stoves" require is for the boiling-pans. The chip-cylinders, which are emptied by hand, are quite small, being twenty-two inches deep and perhaps ten inches wide. A largish earthern pot is inverted over each cylinder, and the camphor condenses at the upper end inside. The

No Jap workers at Twa-hô.

Paying export duty.

Make goes to Hongkong, packed in cases.

Old style Chinese stoves.

How they are worked.

Air condensation.

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pot is cooled by the air; the condensed water falls back into the cylinder. Twenty pots form a stove. Little or no oil is collected by this process of sublimation. By use of the Japanese still, a greater yield is obtained with much less trouble. Three Japanese stills do the work of twenty pots, or one Chinese stove.

No oil made.

Jap still a great improvement.

My Japanese friends, the above-mentioned firm, said that the change in the way of collecting the camphor revenue had been of great advantage to the trade. The Chinese used to collect so many dollars a month from each stove. Sometimes a stove was not busy all the month, but it had to pay tax all the same. Now they can work the stoves or leave them idle, as they please, and the tax is levied as the camphor passes through the depôt town, Bioritsu. The Chinese had other forms of stove, but, as they are going out of use, I need not describe them. The country round Twa-hô is very pretty, and seems fairly healthy. It does not lie high. I was there for three days and saw a great deal, while my servant was catching butterflies. I found my host, Ngo Chong, and his Hak-ka friends, very decent fellows. The Chinese food tasted well after so much Japanese "chow." On leaving Twa-hô I walked over three ranges of hills, part of the way by a path through splendid virgin forest. I passed fine camphor trees, but in a place where there was no water available for distillation. I passed several camphor stoves in very out-of-the-way places, and saw men digging up immense roots in what are now ploughed

Jap mode of levying duty preferable to old Chinese stove tax.

Where the tax is levied.

Pretty country and healthy.

Hak-kas decent people, and food fair.

Long walk over mountains.

Fine camphors, but no water.

Immense old roots.

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fields. This was the longest walk I had in Formosa—over twenty miles.

Third, or southern camphor region, that of Chip-Chip.

My next move was now in the direction of Chip-Chip, the centre of the southern camphor region, which for years had been worked from Tainanfu, the capital of the south. I passed through Tai-chu, once the capital of the island, now the "Prefecture of the Centre."

Way blocked at Nan-to.

In three days I reached Nan-to, one day's journey from Chip-Chip, where I heard that the road to Chip-Chip was blocked by rebels, and

Rebels and troops after them.

that Japanese troops were out after them. Nan-to itself was half in ruins, the result of recent fighting. I was advised by the Japanese officer

Try another road, *viâ* Kwa-tau.

in command, to try another route *viâ* Kwa-tau, fetching a circuit to the northward, and reaching Lake Candidius *viâ* Polisiya. From Lake Candidius to Chip-Chip is but one day's journey. He thought this road would be open.

Set out for Lake Candidius.

Although this route involved considerable mountain work, I decided to try it rather than go back without visiting the southern camphor section. So I set out.

Leave Jap boy, Eno, at Kwa-tau.

Leaving my Japanese boy Eno at Kwa-tau to catch butterflies in the mountains, I pushed on with Mr. Dos Santos, my Chinese interpreter, some seven coolies and two soldier guards. After

Mountains and fine country.

stiff climbing through very lovely country, and past occasional camphor stills and many guard-

Po-li-si-ya.

houses, we arrived at the outpost town of Po-li-si-ya. Here all seemed quiet. Next day we

Sui-sha, on the Lake.

reached the little village of Sui-sha on the charming Lake Candidius, almost in the centre of the

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island. The weather was very clear, and we had a grand view of lofty Mount Morrison (thirteen thousand feet) covered with forest to the summit. The officer in command at Sui-sha refused me an escort for Chip-Chip, saying that the rebels were being driven into the hills (that is where they generally disappear) by a body of six hundred troops. Indeed, we could hear for ourselves the firing going on in the distance, and a detachment of Jap soldiers marched through the village that evening. Reluctantly I decided to give up trying to reach Chip-Chip. My Chinese host at Suisha, Mr. Hum Tian Sang, had, staying with him, his brother Hum Tang, a camphor dealer from Chip-Chip, who, through my interpreter, told me how bad things were round about Chip-Chip. How stills had been destroyed, the people robbed, and the camphor trade entirely stopped, all owing to the rebels and robbers, who are Hok-los, not Savages. He had had to bury three hundred cases of camphor in the ground, and was staying here with his brother, waiting for things to improve. He said Mr. Bain, merchant, of Tainanfu, had lost money that he advanced to camphor men in Chip-Chip. The Japs had not yet touched that camphor field. The Chinese have been working camphor in Chip-Chip and in Yunlin for a good many years, and the stills are scattered for a long distance round the town. They are working on tree trunks, not roots. There are plenty of camphor trees in reserve.

Mount Morrison.

Am refused an escort.

Rebels and troops fighting.

Soldiers to the front.

My host's brother, a refugee camphor merchant from Chip-Chip.

Hard times at Chip-Chip.

Rebels are Chinese.

Mr. Bain, of Tainanfu.

Old established camphor field.

Plenty of camphor in reserve.

As a consolation for my disappointment, I

Disappointed and having to return.

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engaged a Savage to take me for a trip on the Lake in his dugout. He was a nice gentle savage, with very little on. The north and east sides of the lake are enclosed by high hills covered with dense forest. In the lake itself are some curious floating islands. Last year, Mr. Bain, of Tainanfu, was here and left his card with my host.

The lake with floating islands.

Bain here.

I made my way back through the mountains to Kwa-tau, picked up my boy Eno, and journeyed to Tai-peh by a slightly different route. I noticed that the country west of Lake Candidius is sending its camphor by coolies to Rok-kō for shipment. It all goes to Hongkong, packed in lead. So much passes along, that the coolie trail smells of camphor. The inhabitants about Chip-Chip are Chinese, not Hak-kas. Some years ago, this region was extensively worked by Chinese, who were financed by merchants at Tainanfu. About 1893-4-5, my interpreter, Santos, was employed there as camphor buyer.

Country west of the lake.

About 1891-2, Mr. Siebenmann, of the German firm of Butler and Co., travelled extensively in the Chip-Chip region, accompanied only by a Chinese interpreter, and was instrumental in starting a good many stoves. He told me he had no trouble with the Savages. Alexander Bain of Tainanfu, about the same time, or later, also advanced money for putting up stoves in this district, which is reported to be still rich in camphor trees.

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CHAPTER IV.

THE CAMPHOR TRADE IN FORMOSA.

STATISTICS.

History of the trade.

FORTY or fifty years ago, camphor in Formosa was the monopoly of the Tao-tai, or Chinese governor. All the same, a good deal was clandestinely produced, and smuggled across to the mainland, where it was bought by European merchants. In the sixties, an Amoy firm, Messrs. Elles and Company, were the first European merchants to make contracts for supplies of camphor with Formosan landowners and heads of clans. They were strongly opposed by the Tao-tai, and British gunboats were employed, and a money compensation exacted from the Chinese, before the matter was settled finally, in 1876.

First European dealers.

Now Germans, mostly, the Europeans.

At the present time, there are only three European firms in the Island who deal at all largely in camphor—Butler and Co., of Twatutia, and Bain and Co., and Julius Mannich, both of Tainanfu. Butler and Co. have worked the business in connection with Chinese capitalists and landowners. Probably Bain has done the same in the southern district, where there are not many Hak-kas and the drug is produced by Chinese workers.

Work in with the Chinese.

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Butlers' business lay mostly in the central district, at Twaho. One of his men, Greiner, lived for seven years at that place. I was told that, after the war with China, Butlers' received 45,000 yen as compensation in consequence of some privileges granted by the Chinese government being interfered with. Partners and employés are alike German. All the camphor they handle goes to Hongkong, packed in lead.

In Formosa it is necessary for the merchant or speculator to advance the capital required to put up the stoves, etc.—no money, no camphor. He then buys the output at a price agreed upon. A good stove can generally be put up for £1 16*s*.

Butlers' people complained that the Japanese officials try to hinder their camphor business and prevent their travelling in the interior. They had far more freedom under the Chinese. According to Butlers, the Japs are seeking to monopolise the trade, having already done so in the Tokoham district. One Japanese company has obtained a grant of five square miles of forest in the central district, and is now preparing to work camphor. This is quite apart from Nakamura's venture.

The largest trade has been done by the Chinese dealers in conjunction with capitalists, such as Lim Tsai Tang. These people have, for years, had men boiling camphor all along the western slope of the hills; the produce being exported to Hongkong from the small junk ports such as Lo-kang (Rok-kō) and Gochei.

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Since the arrival of Japanese camphor makers, the drug has also been shipped to Kobe, where, being repacked Japanese fashion, it is sold as Japanese.

When I was in Formosa, the trade was in a state of great uncertainty. Though the export duty of 10 yen gave satisfactory results, it was thought that the Tokio authorities were elaborating fresh plans for regulating the business.

Prices in Formosa are regulated by those prevailing at Hongkong where, from time to time, there is brisk speculation in camphor.

FORMOSA CAMPHOR EXPORT 1882—1898.

Year.	TAMSUI. Value.	TAMSUI. Weight lbs.	TAINANFU. Value.	TAINANFU. Weight lbs.	Total weight.
1882		457,429			457,429
1883		410,438			410,438
1884		58,919			58,919
1885					
1886		125,818			125,818
1887	£ 5,412	335,990	£ 630	31,272	367,262
1888	5,811	383,040	1,913	128,128	511,168
1889	7,325	477,456	1,447	79,408	556,864
1890	26,050	864,304	1,964	101,248	965,552
1891	63,885	2,234,736	6,352	282,688	2,517,424
1892	49,449	1,729,280	16,271	609,728	2,339,008
1893	116,836	3,599,008	25,523	843,360	4,442,368
1894	90,149	3,708,096	43,979	1,564,752	5,272,848
1895	98,905	2,644,400		1,349,285	3,993,685
1896	194,221	4,174,128	44,888	896,784	5,070,912
1897	121,958	3,763,536	12,525	441,952	4,205,488
1898	92,292	2,928,128	12,525	128,016	3,056,144

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CHAPTER V.

CONCLUSION.

FORMOSA is not only the greatest camphor producing country in the world, but it is in Japan's new colony that we find the greatest store of potential camphor. No other country that we know of is so rich in camphor laurels, and to these the savage inhabitants of the island have acted as forest guards.

But the camphor reserves of Formosa are *not* "boundless and inexhaustible." They have diminished at least fifteen per cent in the last twenty-five years. In the settled districts the tree is practically extinct, and every year the area of settlement increases. At present camphor making and settlement go hand in hand; the stills are never far from a village, even when in the "Savages' country."

Now, the Japanese propose to establish camphor camps and to exploit the forest without any intention of colonizing or interfering with the Savages. Forests thus worked out should recover in time, provided that the charcoal burner will spare the young trees; these are, unfortunately, just the ones he likes to cut. A whole chapter might be written about the

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iniquities of the charcoal burner. When the country becomes safer, the wood-cutter and the charcoal burner will have a wider range than at present. It is naturally to be expected that when the hill country becomes safe, the congested farming population of the plain will surely migrate to the forest region and bring it into cultivation—this will be very bad for camphor.

It is a fortunate thing for the camphor industry that the Formosa forest is generally too damp to burn. Forest fires are uncommon; otherwise the camphor trade would not be worth twenty years' purchase.

Considering all the available data, it will be safe to estimate that, allowing for a considerable increase in the present output, there is enough camphor in Formosa to supply the world for fifty years to come.

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APPENDIX TO THE

REPORT ON CAMPHOR

IN JAPAN AND IN FORMOSA.

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APPENDIX.

LATEST DEVELOPMENTS IN THE CAMPHOR INDUSTRY.

A. *In Japan.*

The Revised Treaties.

AFTER years spent in negotiations with foreign governments, The Revised Treaties at last came into operation in July, 1899. Under the new treaties, foreigners are at liberty to reside and carry on trade in any part of Japan, but are subject to Japanese law, and must pay the same taxes as do the natives; while the Imperial Government obtains the right to fix its own customs tariff.

Protective duties introduced.

For the past thirty years, Japan had been subjected to what was practically a free trade tariff. The new tariff has been arranged on moderate protectionist lines.

Camphor not affected.

The camphor industry of Japan will not be affected to any appreciable extent by the new treaty arrangements. But foreigners are now at liberty to manufacture or deal in camphor in any part of Japan.

Decrease in camphor exports.

The export of camphor from Japan during the year 1898 was less than that of the previous year by 232,960 lbs. in weight, and £12,353 in declared value.

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A progressive decrease likely.

The recent enhanced price of crude camphor, occasioned by the Formosan Monopoly, may cause a temporary increase in production, but, on account of the exhaustion of the forest reserves, we must look forward to progressively decreasing Japanese exports in the future.

Camphor distilled from leaves.

The Japanese press has lately called attention to a plan for distilling camphor from the leaves of the camphor laurel. These would be plucked from trees purposely trained to grow low. The yield of gum was said to be satisfactory; but, for the present, the matter remains in a state of plausible theory.

B. *In Formosa.*

In this beautiful and fertile island, the Japanese have had to contend against both man and nature.

North Formosa. Typhoons, flood and plague.

North Formosa has recently been ravaged by two typhoons and a great inundation, while the bubonic plague has been prevalent in the chief towns for the last two years. Acting on the advice of Professor Burton, of Tokyo University, the Government has introduced many practical reforms in the sanitation of the towns. One town, indeed, has been moved to another site.

Sanitation.

North Formosa quiet.

North Formosa has lately been in a less disturbed condition than at any time since the Japanese occupation. The Savages have been kept quiet, and the armed raiders generally held in check; some of the latter have submitted and sworn allegiance to the Emperor.

South Formosa disturbed.

The same cannot be said of South Formosa,

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which has continued in a disturbed state. The armed raiders, or brigands, have been active, rendering the country outside the chief towns unsafe for travellers. In the principal camphor producing districts, Chip-Chip and Yunlin, work has been almost at a standstill, owing to the presence of brigands in the country and along the roads leading to it. As a compensation for these troubles, South Formosa has been fairly healthy.

Brigands.

Camphor production stopped.

South Formosa healthy.

Baron Kodoma has now been Governor-General of the Island for the unusually long period of two years, and has proved himself a man of ability and resource. He is said to be the best ruler since the great Chinese Governor Liu Ming-chuang, who, by the way, also introduced a Camphor Monopoly. During Kodoma's rule, the strictly bureaucratic system of administration, introduced from Japan, has been modified, and a return made toward the former Chinese method of local self-government; the village "headmen" and chiefs of clans being now entrusted with more power and responsibility.

Governor-General Kodoma.

Reintroduces local self-government.

The currency is still in an unsettled condition. The Formosan Bank, recently established, will doubtless effect an improvement and lead the way to the introduction of the Japanese gold standard. Part of the capital of this bank was subscribed by the Imperial Household.

Currency.

Formosan Bank.

During the first four years of the Japanese occupation (1894-8) the Formosans paid no direct taxes, but in April, 1899, a new system of imposts was introduced, by which land, houses, business and professions were taxed. Hairdressers, for

Direct taxation introduced.

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instance, paying 1 yen, actors 3 yen, and *geisha* 5 yen a month, while lawyers and middlemen "go-betweens" pay 5 per cent. on fees received. The result has been a large increase in the revenue. In a few years' time, we may expect to find the Island budget balance without recourse to the usual annual contribution from the Imperial exchequer.

The Formosan Railway Co. acquired by Government.

Line to be prolonged.

The, financially, very weak Formosan Railway Company has just been taken over by the Government, and contracts for the construction of the southern prolongation of the line have been granted to Japanese firms. On account of the numerous and frequently devastating torrents that have to be bridged, it will be a costly undertaking. At the present time North and South Formosa are connected by a Decanville military tramway, which is frequently interrupted by freshets from the mountains.

Decanville tramway.

New communications by Japanese steamers.

The Osaka Shosen Kaisha line of heavily subsidised steamers has established regular communication between Tamsui, Amoy, Foochow and Hongkong; severely competing with the Douglas Line of British steamers. Freights on camphor, tea, etc., from Tamsui and Kelung to Japan have quite lately been reduced by 50 per cent. In 1898 about 200 piculs of camphor per month were shipped from Formosa to Japan. Coinciding with the abrogation of the Old Treaties, under which foreigners had the right to trade in camphor, the Japanese established last July a Government Camphor Monopoly in the Island. To this end, in the spring of 1899, a bill

Great reduction in freights.

Camphor shipped to Japan.

Formosan Camphor Monopoly.

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was introduced by Government, and passed by the Imperial Diet, sanctioning the appropriation of a sum of £170,000, to cover the requisite initial expenditure. In this grant, a sum of money was included for "experimental purposes." The Monopoly commenced operations in July, 1899. Initial cost £170,000.

The monopoly in camphor is the second one established by the Formosan Government; a monopoly in opium having been in force for more than two years previously. The opium is all purchased abroad, chiefly in Persia. It is re-manufactured in Taipeh, and sold by agents to opium smokers, who must possess a government license. Other monopolies in Formosa. Opium.

A third monopoly has since been established, a salt monopoly, the working of which is now a cause of trouble in the Island. Salt.

According to the regulations of the Camphor Monopoly, all persons wishing to manufacture camphor must first procure a specific license from the Administration. Five Government Purchasing Stations have been established in convenient localities, and to these centres the drug produced must be brought down for sale by the makers; the Administration buying the crude camphor and camphor oil at a price fixed according to the grade of the article. The purchasing depôts nearest the shipping ports pay a somewhat higher price, as compensation for extra length of coolie carriage from the producing districts. New camphor regulations. Camphor Purchasing Stations.

The purchasing price first fixed by the Administration was 30 yen (60*s.*) a picul (100 catties) for good crude. This price leaves but a small profit Purchasing price.

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to producers and is not particularly calculated to spur them on to increase the output of their stills. Indeed, since the setting up of the Monopoly there has been a disappointing falling off from the estimated official exports. Possibly smuggled export by junk to Hongkong has at the same time increased, especially from small ports in Mid Formosa, where the coast is difficult to guard.

First result disappointing.

Smuggling.

The Monopoly Administration has the exclusive right to sell camphor and camphor oil for export, and at such prices as shall return a good profit to the Island exchequer. The Monopoly selling price was first fixed at 42 yen (84*s.*) per picul; but this price I believe has since been raised. It would not be surprising should the Administration seek to make a gross profit of 100 per cent.

Selling price of camphor.

When the scheme for a Monopoly was broached, an immediate rise occurred in the price of camphor. This occasioned increased exports of the Formosan drug, the dealers desiring to clear their stocks at a good price before the Monopoly should come into operation. Until July, 1899, a duty of 10 yen per picul was payable on camphor exported.

Effect on market prices.

Before the end of 1898, Messrs. Butler and Co., of Twatutia, had ceased dealing in camphor. Julius Mannich, and Bain and Co., of Tainan, South Formosa, were also out of the business. Thus, for some time before the Monopoly was established, the European firms in the Island had quitted the camphor trade.

European firms cease to deal in camphor.

Although Europeans have ceased to be active in the field, Japanese camphor interests are every

Camphor business entirely in hands of Japanese and natives.

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day growing in importance. It is stated that there are now 2,000 Japanese workers employed, mostly in the Tokoham or Northern district, where there is an immense reserve of untouched and favourably situated forest. There is communication by river from Tokoham to Twatutia and Tamsui.

Immigration of Japanese workers.

That the establishment of the Formosan Monopoly will have a beneficial effect on the future of camphor, there can be no doubt. A long continuance of the wasteful Hakka and Chinese methods of working, without thought of the future, would exhaust even the rich forests of Formosa. As it is, we have to thank the mountain Savages for so much forest remaining yet untouched. The Island is but half the size of Ireland, and we can only count on three-sevenths of its surface as now bearing camphor laurels.

Monopoly beneficial to camphor industry.

Camphor reserves far from boundless.

The Monopoly Administration will establish a *modus vivendi* with the Savages, regulate the cutting of the trees, and, perhaps, even try replanting. Government money having been granted for "experimental purposes," better methods will be introduced and improvements effected in the transport to the buying depôts, in the grading and in the drying, while the packing of the crude will be better done. Centrifugal water and oil extractors are probably now in use at Tokoham camphor village. Compressed blocks of crude camphor, handy for packing, and weighing 10 catties (13 lbs.) each, are already in the London market.

Monopoly will promote better working.

Better quality of crude.

Improved apparatus.

Compressed blocks.

One good feature of the new Monopoly is that

Monopoly, its good points.

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it gives the Mikado's enlightened government a direct interest in seeing that the world's chief store of potential camphor is properly husbanded. Had Formosa remained a Chinese province this good result could hardly have been obtained. The Japanese have a genius for practical collective action which the Chinese, with all their cleverness and many good qualities, do not possess.

Bad features.

A far less satisfactory feature in connection with the Monopoly, is the great influence it can exercise on the camphor market by restricting the output, and by manipulating prices.

Camphor industry entirely in Japanese control.

It is true that camphor laurels are found growing wild in other countries besides Japan and Formosa, as in South China, Hainan Island and in Sumatra; but they are not now available for camphor making. At the present time, therefore, we find the world's supply of camphor more than ever entirely in Japanese control. Let us hope that this control will be honestly exercised!

FINIS.

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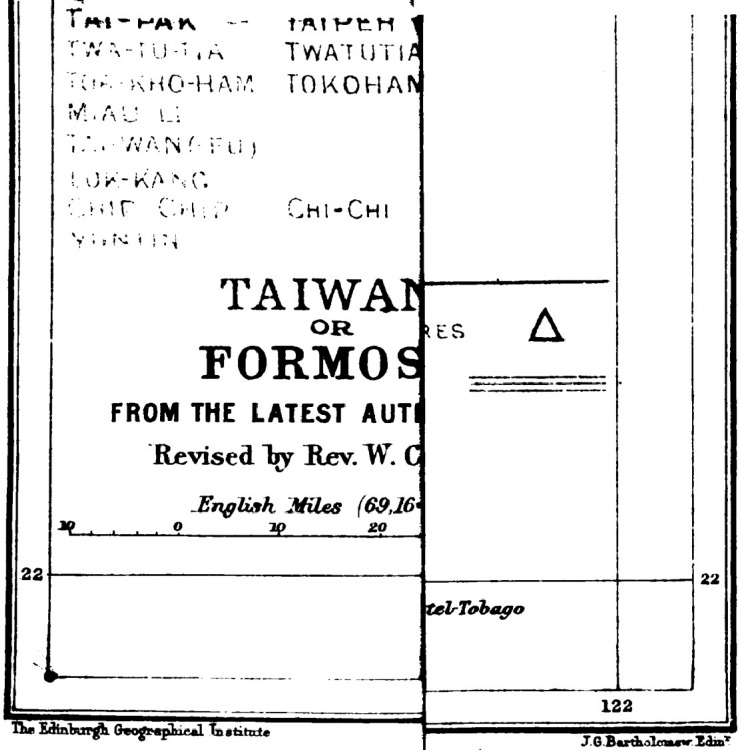

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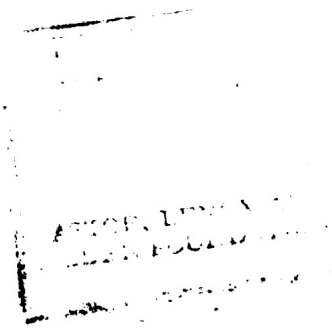

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